December 17, 2007

Mr. James M. Shuler
Manager, Packaging Certification Program
Safety Management and Operations
Office of Environmental Management
U S. Department of Energy
Washington, DC 20585

SUBJECT: AMENDMENT OF CERTIFICATE OF COMPLIANCE NO.5797

Dear Dr. Shuler:

As requested in your letter dated August 20, 2007, and supplemented by letter dated October 29, 2007, enclosed is Certificate of Compliance (CoC) No. 5797, Revision No. 17, for the Model No. Inner and Outer HFIR Unirradiated Fuel Element Shipping Containers. This certificate supersedes in its entirety, CoC No. 5797, Revision No. 16, dated October 29, 2007. Changes made to the enclosed certificate are indicated by vertical lines in the margin. The staff's Safety Evaluation Report is also enclosed.

The approval constitutes authority to use the package for shipment of radioactive material and for the package to be shipped in accordance with the provisions of 49 CFR 173.471. Those on the attached list have been registered as users of the package under the general license provisions of 10 CFR 71.17 or 49 CFR 173.471. Registered users may request by letter to remove their names from the Registered Users List.

If you have any questions regarding this certificate, please contact me at (301) 492-3294 or Stewart Brown of my staff at (301) 492-3317.

Sincerely,

Robert A. Nelson, Chief
Licensing Branch
Division of Spent Fuel Storage and Transportation
Office of Nuclear Material Safety
and Safeguards

Docket No. 71-5797
TAC No. L24145

Enclosures: CoC No. 5797, Rev. No. 17
Safety Evaluation Report
Registered Users

cc w/encls. 1 & 2: R. Boyle, Dept. of Transportation
Registered Users

NRC FORM 618
(8-2000)
10 CFR 71

U.S. NUCLEAR REGULATORY COMMISSION

CERTIFICATE OF COMPLIANCE
FOR RADIOACTIVE MATERIAL PACKAGES

1 a. CERTIFICATE NUMBER	b. REVISION NUMBER	c. DOCKET NUMBER	d. PACKAGE IDENTIFICATION NUMBER	PAGE	PAGES
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2. PREAMBLE

a. This certificate is issued to certify that the package (packaging and contents) described in Item 5 below meets the applicable safety standards set forth in Title 10, Code of Federal Regulations, Part 71, "Packaging and Transportation of Radioactive Material."

b. This certificate does not relieve the consignor from compliance with any requirement of the regulations of the U.S. Department of Transportation or other applicable regulatory agencies, including the government of any country through or into which the package will be transported.

3. THIS CERTIFICATE IS ISSUED ON THE BASIS OF A SAFETY ANALYSIS REPORT OF THE PACKAGE DESIGN OR APPLICATION

a. ISSUED TO *(Name and Address)*

U.S. Department of Energy
Washington, D.C. 20585

b. TITLE AND IDENTIFICATION OF REPORT OR APPLICATION

U.S. Department of Energy
application dated May 30, 1991,
as supplemented

4. CONDITIONS

This certificate is conditional upon fulfilling the requirements of 10 CFR Part 71, as applicable, and the conditions specified below.

5.

(a) Packaging

(1) Model No.: Inner HFIR Unirradiated Fuel Element Shipping Container, and
Outer HFIR Unirradiated Fuel Element Shipping Container

(2) Description

Packaging for unirradiated fissile radioactive material as fuel elements for the High Flux Isotope Reactor (HFIR). The containers are right circular cylinders with an11-gauge carbon steel shell. The lid is attached to the container with sixteen 3/8-16x1-inch steel bolts. The steel shell is filled with stacked fir plywood rings. The plywood rings form a central cavity which is lined with 1-inch thick polyethylene foam.

The packaging for the inner HFIR fuel element has overall dimension of 25 inches OD by 45 inches high, a 10-7/8-inch diameter by 30-1/4-inch deep cavity, and a 660 pound gross weight.

The packaging for the outer HFIR fuel element has overall dimensions of 31.5 inches OD by 45.75 inches high, a 17-3/8-inch diameter by 31-1/8-inch deep cavity, and a 1,050 pound gross weight.

(3) Drawings

(i) The packaging for the inner HFIR fuel is constructed in accordance with Martin Marietta Energy Systems, Inc., Drawing Nos. M-20978-EL-003E, Rev. E, and M-20978-EL-008E, Rev. C

5. (a) (3) Drawings (continued)

(ii) The packaging for the outer HFIR fuel is constructed in accordance with Martin Marietta Energy Systems, Inc., Drawing Nos. M-20978-EL-002E, Rev. D, and M-20978-EL-008E, Rev. C.

(b) Contents

(1) Type and form of material

Uranium as U_3O_8-Al cermet, enriched up to 95% in the U-235 isotope, and clad in aluminum, 10-mils thick, and:

(i) For the packaging described in 5(a)(3)(i), the contents are described in ORNL/TM-9220, "Specifications for High Flux Isotope Reactor Fuel Elements HFIR-FE-3," and in the following Oak Ridge National Laboratory Drawing Nos.: E-42118, Rev. Q; E-42112, Rev. H; D-42113, Rev. G; D-42114, Rev. J; and E-42117, Rev. H.

(ii) For the packaging described in 5(a)(3)(ii) the contents are described in ORNL/TM-9220, "Specifications for High Flux Isotope Reactor Fuel Elements HFIR-FE-3," and in the following Oak Ridge National Laboratory Drawing Nos.: E-42126, Rev. M; E-42120, Rev. H; D-42121, Rev. H; D-42122, Rev J; and E-42125, Rev. J.

(2) Maximum quantity of material per package

(i) For the contents described in 5(b)(1)(i) not more than 2.63 kg of U-235.

(ii) For the contents described in 5(b)(1)(ii) not more than 6.88 kg of U-235.

(c) Criticality Safety Index 0.4

6. The lid lifting attachments must be blocked as shown on Martin Marietta Energy Systems, Inc., Drawing No. M-20978-EL-009E, Rev. 2, to prevent inadvertent use of the attachments during transport.

NRC FORM 618 (8-2000) 10 CFR 71			U.S. NUCLEAR REGULATORY COMMISSION	
CERTIFICATE OF COMPLIANCE FOR RADIOACTIVE MATERIAL PACKAGES				
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7. In addition to the requirements of Subpart G of 10 CFR Part 71:

   (a) Each package shall be maintained in accordance with the Maintenance Program in Chapter 8 of the application;

   (b) Each package shall be operated and prepared for shipment in accordance with the Operating Procedures in Chapter 7 of the application; and

   (c) The fuel element shall meet the fabrication inspection requirements of ORNL/TM-9220, "Specifications for High Flux Isotope Reactor Fuel Elements HFIR-FE-3."

8. Use of packaging fabricated after December 31, 1976, is not authorized.

9. The packaging authorized by this certificate is hereby approved for use under the general license provisions of 10 CFR 71.17.

10. Transport by air of fissile material is not authorized.

11. Expiration date: September 30, 2012.

REFERENCES

U.S. Department of Energy Application dated May 30, 1991.

Supplements dated: February 26, 1992; April 2, 1993; September 23, 1996; September 2, 1998; February 24, 2000; February 4, 2002; August 20, 2007; and October 29, 2007.

FOR THE U.S. NUCLEAR REGULATORY COMMISSION

Robert A. Nelson, Chief
Licensing Branch
Division of Spent Fuel Storage and Transportation
Office of Nuclear Material Safety
and Safeguards

Date: December 11, 2007

SAFETY EVALUATION REPORT
Model No. Inner and Outer HFIR Unirradiated Fuel Element Shipping Containers
Certificate of Compliance No. 5797
Revision No. 17

SUMMARY

By application dated August 20, 2007, and supplemented October 29, 2007, the U.S. Department of Energy (the applicant), submitted a request for revision of Certificate of Compliance (CoC) No. 5797, Revision No. 16, for the Model No. Inner and Outer HFIR Unirradiated Fuel Element Shipping Containers. The applicant requested that CoC No. 5797, Revision No. 16, be revised to reflect revisions of drawings D-42114 and D-42122.

EVALUATION

By application dated August 20, 2007, and supplemented October 29, 2007, the applicant submitted a request for revision of CoC No. 5797, Revision No. 16. The applicant requested that CoC No. 5797 be revised to reflect revisions of drawings D-42114 and D-42122. The fuel fabricator of the HFIR fuel elements, based on more sensitive measurements, has determined that the distance between the fuel area and the edge of the fuel element plate is slightly greater than the values reflected in drawings for both the inner and outer fuel element plates (D-42114, Revision H, and D-42122, Revision H, respectively). Thus, these drawings were revised to reflect a tolerance change of 0.010 inch. The applicant indicated that these tolerance changes would result in a very minor reduction in calculated k_{eff} values. Further, the applicant concluded that this new tolerances do not change the criticality findings provided in the safety analysis report.

The staff agrees with the applicant's assessment of the tolerance changes. Further, the staff concludes that these changes do not affect the ability of the Model No. Inner and Outer HFIR Unirradiated Fuel Element Shipping Containers to meet the requirements of 10 CFR Part 71.

CONCLUSION

In response to the applicant's request, CoC No. 5797, Revision No. 16, Conditions 5(b)(1)(i) anc (ii) have been revised to reflect revisions of drawings D-42114 and D-42122, respectively.

Based on the statements and representations in the application, the staff finds that these changes do not affect the ability of the Model No. Inner and Outer HFIR Unirradiated Fuel Element Shipping Containers to meet the requirements of 10 CFR Part 71.

Issued with CoC No. 5797, Revision No. 17,
on December 17, 2007.